

2023-1173, 2023-1179, 2023-1180 and 2023-1191

**United States Court of Appeals
for the Federal Circuit**

KOSS CORPORATION,

Appellant,

— v. —

BOSE CORPORATION,

Cross-Appellant.

*On Appeals from the United States Patent and Trademark Office, Patent
Trial and Appeal Board in Nos. IPR2021-00612 and IPR2021-00680*

RESPONSE AND REPLY BRIEF FOR APPELLANT

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JULY 25, 2023

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STATEMENT OF THE ISSUES

On Bose's Cross-Appeals, limited to the Signal Strength claims of the '025 and '934 Patents:

1. Whether substantial evidence supports the Board's determinations (one in each of the two IPRs) that Bose failed to show that Harada teaches a first device playing digital audio content received from multiple registered sources.
2. Whether substantial evidence supports the Board's determination that Bose had not articulated a reason, with a rationale underpinning, to combine the other references in Bose's Harada-based combinations with a generic teaching of transitioning from one source to another based on signal strength.

STATEMENT OF THE CASE (CROSS-APPEALS)

In its Cross-Appeals, Bose challenges only factual findings by the Board in its ultimate determinations that Bose failed to establish, in both IPRs, that the so-called Signal Strength claims in both patents are unpatentable. The Signal Strength claims are: claims 4, 5, 7, 9, 14, 15, 17, 19, 23, 24, 26, 28, 32, 33, 35, 37, 44, 45, 47, 49 and 50 of the '025 Patent; and claims 4, 6, 8, 12, 13, 17, 18, 20, 22, 38, 40, 41 and 58-62 of the '934 Patent. These claims recite a “transitioning” claim limitation, i.e. that the headphone assembly “transitions to play digital audio content received wirelessly from a second digital audio source via a second wireless communication link based on, at least, a signal strength level for the second wireless communication link ...” Appx253, 18:53-57; Appx285, 18:56-60.

I. THE ASSERTED GROUNDS FOR THE SIGNAL STRENGTH CLAIMS IN THE IPRS

Bose asserted two primary grounds in each IPR against the Signal Strength claims and both grounds relied on U.S. Pub. No. 2006/0229014 to Harada et al. (“Harada,” Appx7615-7668) for the “transitioning” claim limitation. Appx51; Appx184-185. In IPR2021-00612, Ground 1B was that certain Signal Strength claims of the '025 Patent are unpatentable over Rezvani-446, Rezvani-875, Skulley and Harada; and Ground 2B was that certain Signal Strength claims are unpatentable over Schrager, Goldstein and Harada. In IPR2021-00680, Bose flipped the ordering

of the grounds: Ground 1B was that certain Signal Strength claims of the '934 Patent are unpatentable over Schrager, Goldstein and Harada, whereas Ground 2A was that was that certain Signal Strength claims of the '934 Patent are unpatentable over Rezvani-446, Rezvani-875, Skulley and Harada. Other asserted grounds involved Signal Strength claims too,¹ but for the purposes of Bose's Cross-Appeals, it is sufficient to focus on the asserted Schrager-Goldstein-Harada and Rezvani-Rezvani-Skulley-Harada combinations, as the Board did in its final written decisions and as Bose did in its opening brief. Appx181-189; Appx199-200; Appx206-207; Appx219-220; Appx58; Appx72; Appx90; Bose's Principal and Response Brief (Dkt. 21, "Bose Br.") at 17.

II. HARADA

Harada discloses an "electronic device" that can transmit and receive short-range wireless signals (e.g., Bluetooth signals) to and from "destination" or "registered" devices. Appx7615, Abstract; Appx7652, ¶ [0067]. The electronic device can be a cellular phone (reference number 4 in Harada) and the destination devices (reference numbers 61, 62, 63, ..., 6N in Harada) can be cellular phones or other communication devices. *Id.* The electronic device can also prioritize

¹ Grounds 1E, 1G, 2D and 2F in IPR2021-00612 also involved Signal Strength claims, as did Grounds 1D and 2D in IPR2021-00680. Koss Open. Br. at 14-21 (cataloging asserted grounds); Appx47; Appx72, n.23; Appx199-200; Appx206-207.

connections to the destination devices “to select a connection destination.” Appx7649, ¶ [0010].²

III. THE BOARD’S FINAL WRITTEN DECISIONS

The Board’s final written decision in IPR2021-00612 was unanimous (Appx138), whereas one administrative patent judge (APJ) dissented in IPR2021-00680 for the Signal Strength claims alone. Appx1; Appx51, n.14; Appx90, n.26; Appx118. Two APJs (Scanlon and McKone) served on both panels. In total, three different APJs (Scanlon, McKone, and Beamer) ruled in Koss’s favor on the Signal Strength claims and one APJ (Easthom) ruled in Bose’s favor. Appx1; Appx138.

The unanimous panel for IPR2021-00612 and the majority for IPR2021-00680 applied similar analyses, although the panel’s opinion in IPR2021-00612 focused on the Rezvani-446, Rezvani-875, Skulley and Harada combination, whereas the majority’s opinion in IPR2021-00680 focused on the Schragger, Goldstein and Harada combination. Appx184-190; Appx219-220; Appx47-58; Appx90; Bose Br. at 30 n.8. In both IPRs, the Board provided two independent reasons — both predicated on specific factual findings — for concluding that Bose failed to show that the Signal Strength claims were unpatentable.

² For consistency, Koss endeavors to refer herein to the electronic device 4 of Harada as the “first device” and its destination devices 61, 62, 63, ..., 6N as “registered devices.”

First, the Board found that Bose failed to disclose the “transitioning” claim limitation, i.e., that Bose failed to show “that Harada teaches playing digital audio content received from multiple sources.” Appx186; Appx52. The Board explained that certain paragraphs of Harada (i.e., ¶¶ [0016], [0078], [0085] and [0145-0147]) relied upon by Bose in its petitions did not “describ[e] a cellular phone (or other device) [i.e., the first device] receiving digital audio content from multiple digital audio sources,” i.e., registered devices. Appx186; Appx53. In IPR2021-00680, the majority also determined that the testimony of Bose’s expert, Dr. Williams, “on this point is unhelpful and is entitled to little weight” because it “merely copies from the Petition” Appx54 n.15.

Related to this first finding, the Board also considered a different interpretation of Bose’s theory—that Bose might have relied on the other references in the combinations (i.e., Schrager and Goldstein, or Rezvani-446, Rezvani-875 and Skulley) for playing digital audio content from more than one device, with Harada merely supplying a transition from one generic electronic device to another based in part on signal strength. Appx54; Appx187. The Board found that this theory, however, “is not the combination Petitioner presented in the Petition” and that, in any event, Bose had not shown where “Harada teaches such transitioning.” *Id.*

Second, the Board found that Bose had “not articulated a reason, with a rational underpinning, to combine” the other references in the proposed

combinations “with a generic teaching of transitioning from one source to another.” Appx187-188; Appx55. In each IPR, the Board found that the testimony of Bose’s expert, Dr. Williams, on this issue was “no more than conclusory” and not credible. Appx188; Appx56.

IPR2021-00680 included a dissent as to the Signal Strength claims. The dissenting APJ opined that Harada discloses transitioning based on signal strength and that Harada’s technique, that automates receiving a signal from a registered source before losing the signal from another registered source, can be applied to headphones. Appx119. The dissent also found a motivation to apply Harada’s technique to headphones, i.e., that Harada’s technique was “well-known” and would improve the headphones in the asserted combinations. Appx124.

The majority in IPR2021-00680 addressed the dissent’s views. It said that the dissent did not base its view on “the combination [Bose] presented in the Petition” (Appx54), which was that Harada teaches a technique for the first device to automatically transition from playing digital audio content from one registered device to another. Appx51 (citing Appx837-838). The majority further reasoned that, as described above, even if Bose’s theory was that Harada “merely suppl[ies] a transition from one generic electronic device to another based in part on signal strength,” Bose did not identify where Harada teaches transitioning from one generic data source to another. Appx54.

On the issue of motivation, in each IPR the Board also found that Bose made new arguments at the oral hearing about Harada's dynamic selection capabilities. Appx189; Appx56. The Board reasoned that even if this new argument should be considered, it is not supported by evidence in the record because Bose had not "point[ed] to any description in Harada that, if a [first] device experiences a lack of connection or dropped connection, then the [first] device should connect to something else," i.e., a different registered device. Appx189; Appx56-57.

Finally, the Board rejected, on a factual basis, that Harada's techniques would provide a clear improvement and that Bose's combinations are improvements "only in hindsight." App189; App57. The dissent had a different view on whether Harada's technique would provide an improvement. Appx124.

SUMMARY OF ARGUMENT

On Bose’s Cross-Appeals, this Court should affirm the Board’s finding that Bose failed to prove that the Signal Strength claims are unpatentable under Bose’s proposed Harada-based grounds. Bose only challenges factual findings by the Board on these claims, but sufficient evidence supports the Board’s findings. The Board first found that Bose failed to show that Harada teaches the first device playing digital audio content from multiple sources, i.e., registered devices in Harada. Appx52; Appx186. The record adequately supports the Board’s finding because, as the Board explained, Harada describes merely *selecting* a registered device and that the selected registered device can convey content other than digital audio content, such as text messages. Appx52-54; App186-187.

Bose argues that this first finding by the Board is “inconsequential” in any event, because, according to Bose, “[m]ore critical” to the Board’s ultimate determination was its finding that Harada does not disclose transitioning between sources at all. Bose Br. at 74. However, what the Board actually found was that *Bose failed to identify* where Harada teaches the first device transitioning between registered devices. The portions of Harada cited by Bose in its petitions for such transitioning adequately support the Board’s finding. The cited portions merely disclose the selection, without transitioning. Moreover, the Board’s finding that Bose failed to identify such transitioning in Harada was not “[m]ore critical” to the

Board's ultimate determination because it was only an alternative finding that is independent to the Board's primary finding that Bose failed to show that Harada teaches playing digital audio content from multiple sources.

Finally, the record supports the Board's second finding—that Bose had not articulated a reason, with a rational underpinning, to combine the references in Bose's proposed combinations. Appx55-58; Appx187-189. Far from ignoring Bose's proposed reasons, the Board addressed them squarely and found them lacking. In so doing, the Board appropriately applied case law precedent.

ARGUMENT

In Koss’s appeal, the Board erroneously construed two claims terms—“body portion” in claim 40 of the ’025 Patent and “extends from” in claims 29 and 53 of the ’025 Patent—in IPR2021-00612 and when those terms are properly construed, neither the “Elongated Portion” claims (i.e., claims 40-43, 46, 48 and 51 of the ’025 Patent) nor the “Hanger Bar” claims (i.e., claims 29-31, 34, 36 and 53 of the ’025 Patent) are unpatentable. In IPR2021-00680, no substantial evidence supports the Board’s determination that the “DSP” claims (claims 56 and 57) of the ’934 Patent are unpatentable.

Bose’s cross-appeals involve solely factual findings by the Board but substantial evidence supports those factual findings, each of which is sufficient independently to support the Board’s ultimate determinations that Bose failed to show that the “Signal Strength” claims are unpatentable.

I. THE BOARD’S UNPATENTABILITY DETERMINATIONS IN IPR2021-00612 FOR THE “ELONGATED PORTION” CLAIMS AND THE “HANGER BAR” CLAIMS SHOULD BE REVERSED

A. The Board’s Finding that the Elongated Portion Claims are Unpatentable Should be Reversed

The Board erred in construing the phrase “body portion” in the Elongated Portion claims as “a portion or section of the earphone that forms a body.” Appx204. The error was not harmless and collateral estoppel does not prohibit Koss from disputing that the Elongated Portion claims are unpatentable.

1. The Board Incorrectly Construed “Body Portion”

The Elongated Portion claims recite, in part, first and second earphones, each of which include (i) a body portion that sits at least partially in an ear of the user when the headphone assembly is worn by the user and (ii) an elongated portion that extends from the body portion. *See* Appx28, 23:108 (claim 40). Both parties agree that the term “body portion” is a combination of two words – “body” and “portion.” Bose Br. at 39. As such, the plain meaning of both words must be considered in determining the plain meaning of the combination. *See, e.g., Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1557 (Fed. Cir. 1995) (“We must give meaning to all the words in [the patentee’s] claims.”).

Koss’s opening brief explained that the ordinary meaning of “body” in this context is “the main, central, or principal part,” such that the “body portion” should be construed to mean “the main, central or principal portion of the earphone.” Koss Opening Brief (Dkt. 15, “Koss Op. Br.”) at 36. Bose, in contrast, asserts that the Board correctly construed the term, explaining that the plain meaning of the word “portion” is “part of a whole,” such that the plain meaning of “body portion” is “a portion or section of the earphone that forms a body,” i.e., “a portion of the entire earphone.” Bose Br. at 39 (citing Appx159). However, the Board’s construction effectively replaces the word “body” with “earphone,” thereby losing a distinction between other portions of the earphone, such as the claimed “elongated portion.”

For at least that reason, the Board's construction is inconsistent with the remainder of the words of the Elongated Portion claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) ("claims themselves provide substantial guidance as to the meaning of particular claim terms").

Adopting its erroneous construction, the Board inappropriately concluded that, referring to Fig. 1B of the '025 Patent (Appx261), the body 12 constitutes the entire earphone 10. Appx157. Such a conclusion is not supported by the '025 Patent's intrinsic evidence, particularly the words of the Elongated Portion claims themselves and the disclosure of the '025 Patent. The Board's conclusion equates the ear canal portion 14 to the claimed "body *portion*" and the exterior portion 15 to the claimed "elongated portion," which is an unreasonable interpretation at least in light of the intrinsic evidence's correlation of the body 12 to both the ear canal portion 14 and the exterior portion 15. Appx278, 3:16-20. The earphone 10 depicted in Figure 1B has various components in addition to the body 12, thereby directly contradicting the Board's conclusion that the body 12 constitutes the entire earphone 10. Such additional components include, for example, the elongated portion that extends downwardly from the exterior portion 15 of the earphone.

The wording and structure of the Elongated Portion claims implies that the body portion is different from the elongated portion. *See Becton, Dickinson and Co. v. Tyco Healthcare Group, LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) ("clear

implication” of listing claim elements separately is that those elements are distinct components) (quotations omitted). The intrinsic evidence, particularly a comparison of Figures 1A and 1B, confirms this implication. While the earphones 10 depicted in both Figures 1A and 1B have a body 12, an exterior portion 15, and an ear canal portion 14, only the earphone 10 depicted in Figure 1B has the additional elongated portion extending from the exterior portion 15, as shown below. Appx261.

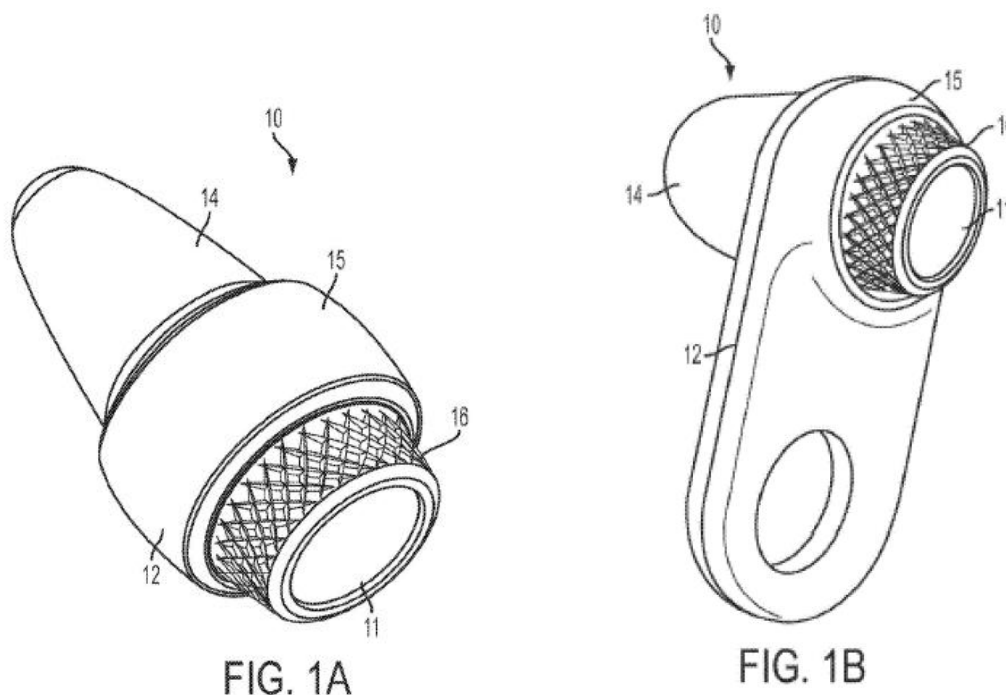
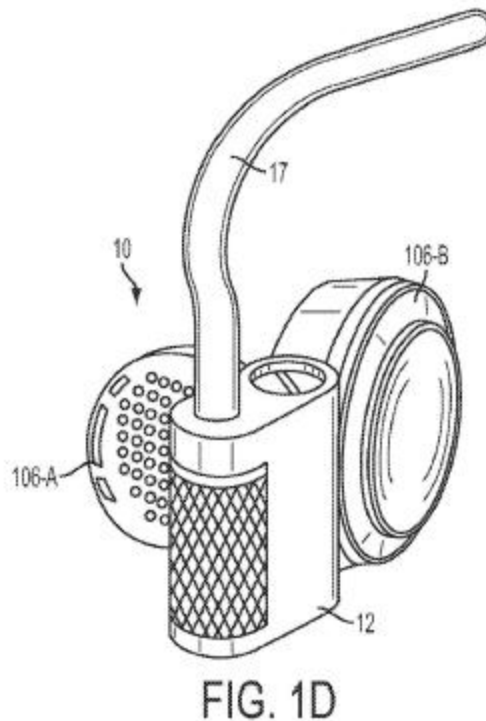


Figure 1D of the '025 Patent (Appx263) provides additional intrinsic evidence supporting Koss's position that the body 12 does not make up the entirety of the earphone 10. The earphone of Figure 1D comprises both a body 12 and a hanger bar 17, as shown below.



Bose contends Figure 1D “explicitly labels the hanger bar as a discrete *element 17* of the earphone, while Figure 1B ... makes *no distinction* between upper and lower halves of exterior portion 15.” Bose Br. at 46 (emphasis in original). As such, Bose suggests that, in order to be considered a distinct component, any elements must be labeled explicitly by a different reference character in order to be considered discrete from one another; however no such requirement exists. While reference characters can be relied upon as part of the intrinsic evidence to construe claims (*see e.g., Ironworks Patents LLC v. Samsung Elec. Co.*, 798 Fed. App’x. 621, 625-26 (Fed. Cir. 2020)), in fact they are not required at all, much less required to indicate discrete components. *See e.g., Manual of Patent Examining Procedure*, Ninth Edition, Revision of July 2022, § 608.01(m) (“Reference characters

corresponding to elements recited in the detailed description and the drawings *may* be used in conjunction with the recitation of the same element or group of elements in the claims” and “the presence or absence of such reference characters does not affect the scope of a claim”) (emphasis added); *see also NXP USA, Inc. v. Impinj, Inc.*, No. 2:20-cv-01503-JHC, 2022 WL 16716226, *12 (W.D. Wash. Nov. 4, 2022) (reference numbers in a means-plus-function claim “do not affect the construction or scope of a claim”).

The Board’s erroneous construction was not harmless, as the Board relied on its inappropriate construction of “body portion” in concluding that Davis’s earbud 46 satisfies the claimed “body portion” of the Elongated Portion claims, while Davis’s receiver enclosure 32 satisfies the “elongated portion” elements of the Elongated Portion claims. Appx204-205. Notably, the Board failed to consider the meaning of “body” within “body portion,” as described above. Under a legally proper construction of “body portion,” there is no evidence that Davis’s earbud 46 constitutes the main, central, or principal portion of Davis’s headset. Therefore, under a legally proper construction, the Elongated Portion claims would not have been obvious and the Board’s cancellation of these claims should be reversed.³

³ Bose asserts in a footnote that “Koss never disputed that Davis’s earbud 46 is a ‘body portion’ under Bose’s construction.” Bose Br. at 38, n.9. However, Koss explained below that “even if Davis’s earbud 46 could be considered the ‘body portion,’” then “neither Davis’s earhook 13 nor Davis’s voice tube ‘extend from’ Davis’s earbud 46.” Appx12088. Thus, the Board’s cancellation of the Elongated

2. Collateral Estoppel Does Not Apply

Bose's assertion that collateral estoppel provides an alternative basis for affirming the Board's determinations for the Elongated Portion claims (Bose Br. at 48-52) is misplaced as collateral estoppel does not apply. One of the elements of collateral estoppel is that the issue at hand is identical to one decided in the first action. *See Google LLC v. Hammond Dev. Int'l, Inc.*, 54 F.4th 1377, 1381 (Fed. Cir. 2022); Bose Br. at 48. Bose asserts here that the "first action" is the Board's unpatentability determination for the Elongated Portion claims of the '934 Patent (i.e., claims 34-37 and 39 of the '934 Patent) in IPR2021-00680, which Koss did not appeal. Bose Br. at 48. The issues, however, were not identical between the two IPRs because, although the Elongated Portion claims in the two patents are similar, Bose relied on different prior art in the two IPRs to show one of the elements, as even Bose acknowledges. Bose Br. at 51. Specifically, Bose relied on Davis (Appx14263-14277) in IPR2021-00612 for the limitations of the Elongated Portion claims related to the form factor of the earphones (Appx11762; Appx203) but Bose relied on a different reference, Oh (Appx7669-7691), for those limitations in the "first action," i.e., IPR2021-00680. Appx884; Appx76-78. Thus, the issues in the two actions were not the same, such that the necessary requirements for collateral estoppel to apply are lacking.

Portion claims should be reversed when the legally proper construction is applied.

To elaborate, in this appeal Koss appeals the invalidation in IPR2021-00612 of certain Elongated Portion claims in the '025 Patent (i.e., claims 40-43, 46, 48 and 51). In IPR2021-00612, Bose asserted that these claims were unpatentable under two grounds: Ground 1F based on Rezvani-446, Rezvani-875, Skulley, Davis and Oh; and Ground 2A based on Schrager and Goldstein. Appx11712. The Board rejected Bose's Ground 2A (Appx216-219), but found in Bose's favor on Ground 1F because Davis's earbud 46 constituted the claimed "body portion." Appx204. This is the finding (based on a legally erroneous claim construction) that Koss appeals. Bose relied on Oh in these claims to teach that the combination would have a wireless communication circuit in each earphone. Appx11761-11762. In IPR2021-00612, neither Bose nor the Board addressed whether Oh's form factor could constitute the body portions of Elongated Portion claims of the '025 Patent.

In the "first action," IPR2021-00680, Bose also asserted that the Elongated Portion claims of the '934 Patent were unpatentable under two grounds: Ground 1A based on Schrager and Goldstein; and Ground 2C based on Rezvani-446, Rezvani-875, Oh and Hind. Appx794; Appx827-828; Appx883-886. The Board "decline[d] to reach" the patentability of the Elongated Portion claims under Ground 1A because it found the claims unpatentable under Ground 2C. Appx37; Appx89. For Ground 2C, Bose relied on "Oh's earbud form factors in the combined system of Rezvani-446, Rezvai-875, and Hind." Appx76; Appx884. In that connection, the Board's

analysis in IPR2021-00680 turned on the form factor of Oh's earbuds. Appx76-78. Bose did not assert Davis at all in IPR2021-00680 and, inherently therefore, did not include Davis in any combination asserted against the Elongated Portion claims of the '934 Patent in IPR2021-00680. Appx8-9; Appx794-795. To that end, the Board's final written decision does not mention Davis at all in its analysis of the Elongated Portion claims of the '934 Patent. Appx37; Appx73-89.⁴

Thus, the issues litigated and decided across the two IPRs for the elongated portions were not identical. In IPR2021-00612, the parties litigated, and the Board decided, whether Davis discloses the body portion element of the claims, whereas in IPR2021-00680, the parties litigated, and the Board decided, whether Oh discloses the body portion element of the claims.

Bose acknowledges this difference, but asserts that it is "immaterial" because Bose relied on Oh in Ground 1F in IPR2021-00612, albeit for other limitations of the claims (i.e., the wireless communication circuit in each earphone, Appx11761-11762), such that, according to Bose, "largely the same combination of prior art was before the Board in both proceedings." Bose Br. at 51 (citing Appx11757-11764). This is a tacit admission that identical combinations were not before the Board,

⁴ The final written decision in IPR2021-00680 mentions Davis only in a block quote from Dr. Casali's testimony about the skill level of a person skilled in the art. Appx12.

which precludes application of collateral estoppel. Bose's Ground 1F in IPR2021-00612 included Davis, and the Board's finding on the Elongated Portion claims in IPR2021-00612 focused on whether Davis taught the "body portion" of the claims (Appx204), yet Davis was not involved with, or material to, the Board's determination for the elongated portions claims in IPR2021-00680. Appx73-89. In IPR2021-00612, neither Bose's petition nor its experts addressed whether Oh could constitute the form factor requirements of the Elongated Portion claims of the '025 Patent. Accordingly, the way Bose structured its ground in IPR2021-00612 deprived Koss from probing those (non-existent) opinions in IPR2021-00612, so the evidentiary record of Oh's relevance to the form factor limitations of the Elongated Portion claims in IPR2021-00612 is incomplete and undeveloped. It is immaterial that Bose relied on Oh in Ground 1F for other limitations besides the form factor limitations because "the Board must base its decision on arguments that were advanced by a party, and to which opposing party was given a chance to respond," such that the Board cannot "raise, address, and decide unpatentability theories never presented by the petitioner and not supported by record evidence." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016); *see also Oren Tech., LLC v. Proppant Express Investments LLC*, No. 2019-1778, 2021 WL 3120819, *5 (Fed. Cir. July 23, 2021) (Board erred by repurposing a theory of motivation that was not asserted in the petition or raised in the institution decision).

In that connection, Bose’s reliance on *Google LLC v. Hammond Dev. Int’l, Inc.*, 54 F.4th 1377 (Fed. Cir. 2022) is misplaced. *See* Bose Br. at 52. There, the grounds in the two IPRs both included the same two key references—Gilmore and Dodrill. 54 F.4th at 1380. In contrast, here the two grounds did not include the same key references; Ground 2C in IPR2021-00680 did not include Davis yet Davis’s disclosure was critical to the issues litigated and decided for Ground 1F in IPR2021-00612.

For these reasons, collateral estoppel does not apply for the Elongated Portion claims of the ’025 Patent in IPR2021-00612 and this Court should reverse the Board’s finding that these claims are unpatentable for the reasons described in Koss’s opening brief and described in the prior section.

B. The Board’s Finding that the Hanger Bar Claims Are Unpatentable Should be Reversed

Koss’s opening brief explained how the Board erred in construing “extends from” in the Hanger Bar claims in the ’025 Patent (claims 29 and 53; *see* Appx287, 21:53-61; Appx288, 24:42-50) and how the error was harmful to Koss. Koss Op. Br. at 52-56. Bose’s counter-arguments are unavailing.

1. The Board Erred in Construing “Extends From”

Part of the intrinsic evidence supporting Koss’s claim construction position that “extends from” should be interpreted to require a direct connection between the earphone and the body is that claims 29 and 53 require “*an* acoustic transducer” and

that the specification of the '025 Patent discloses, at Figures 1D and 1E thereof, a single, dual-speaker element that extends directly from the body 12 into the user's ear. Koss Op. Br. at 52-52; Appx263. Bose does not dispute that under canons of claim construction, "an" acoustic transducer can include multiple acoustic transducers. Bose Br. at 56; *see also* Koss Op. Br. at 52-53 (citing *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000)). Instead, Bose asserts that the claim language of the Hanger Bar claims "contradicts" Koss's construction. Bose Br. at 56. Bose's reasoning, however, is misplaced.

Bose argues that only the speaker element 106-A in Figures 1D-1E extends into the user's ear, and that it does so indirectly via the other speaker element 106-B.⁵ Therefore, according to Bose, the Board appropriately construed "extends from" to permit indirect extensions. *Id.* However, Bose's argument ignores that the speaker elements 106-A and 106-B in Figures 1D-1E make up a single, dual-speaker element, which extends from the body 12 and into the user's ear. In fact, the speaker element 106-A of the dual-element speaker is inserted into the cavum concha of the

⁵ Bose asserts that at page 53 of Koss's opening brief, Koss admitted that the speaker element 106-B does not extend in the user's ear. Bose Br. at 56. Koss stated, however, at page 53 that the speaker element 106-B is not inserted into the "cavum concha." Koss Op. Br. at 53. The "concha" is the bowl-shaped depression of the pinna of the ear. *Id.* at 52, n. 11 (citing Appx13388, ¶61; Appx20372, ¶16). There is no evidence that something has to be inserted into the cavum concha in order to be inserted into the ear.

user's ear according to the '025 Patent's specification. Appx278, 4:6-7.

Bose asserts that “Koss seemingly *agrees* with the Board that at least the part of the earphone that extends into the user ear can itself extend *indirectly* from the ‘body portion.’” Bose Br. at 56 (emphasis in original). From this assertion, Bose extrapolates that if any part of the acoustic speaker is not inserted into the ear, there is an indirect connection for that part that is inserted into the ear, and that, therefore, the Board correctly construed “extends from” because the part of the dual-element speaker in Figures 1D and 1E that is inserted into the user's cavum concha (i.e., speaker element 106-A) is indirectly connected to the body 12 of the earphone via the speaker element 106-B. *Id.* Bose is correct that Koss agrees with the Board's general observation, i.e., that the *part* of the earphone that extends into the user's ear can extend indirectly from the body portion, but Koss disagrees with Bose's leap in logic that if a part of the earphone is inserted into the cavum concha, then therefore the earphone extends indirectly from the body. Bose's argument misses the mark because in Figures 1D and 1E of the '025 Patent, the part that is inserted into the ear, such as the part of speaker element 106-A that fits into the user's cavum concha, extends from *another part of the speaker element itself*, i.e., the dual-element speaker 106A, 106-B, which extends directly from the body 12. In other words, there is one dual-element speaker in Figures 1D-1E that extends directly from the body 12 and into the user's ear. There is no intervening component in Figures 1D

and 1E that connects the speaker element 106-A to the body 12 that is not part of the dual-element speaker that comprises the speaker element 106-A. Bose's argument is equivalent to saying that the entirety of the acoustic transducer needs to be inserted into the user's ear, but that would require the word "entirety" to be read into the claims, which is improper. *See Koss Op. Br.* at 54.

Davis, on the other hand, does not have such a configuration. There is no evidence in the record that Davis's enclosure 32, which extends directly from the alleged body 12 in Davis, is a speaker element or acoustic transducer. Nor is there evidence that the enclosure 32 is inserted into the user's ear. Similarly, there is no evidence in the record that Davis's earbud 46 extends directly from the alleged body 12 or that it extends entirely into the user's cavum concha, which is what Bose evidently construes the claims to require.

For these reasons, the Board erroneously construed "extends from" in the Elongated Portion claims. When the legally proper construction is applied, the claims would not have been obvious under the asserted grounds. *See Koss Op. Br.* at 47-48.

2. The Board's Erroneous Construction of "Extends From" Is Not Harmless

Bose contends that the result of any errors made by the Board in its construction of "extends from" is harmless. In doing so, Bose presents a new interpretation of Davis's Figure 2 (Appx14265) where Davis's enclosure 32 (red)

and Davis's earbud 46 (brown) together are, allegedly, an earphone as recited in the Hanger Bar claims. Bose Br. at 58. Such a combined earphone 32/46 directly extends from the body 12 (pink) according to Bose. *Id.*

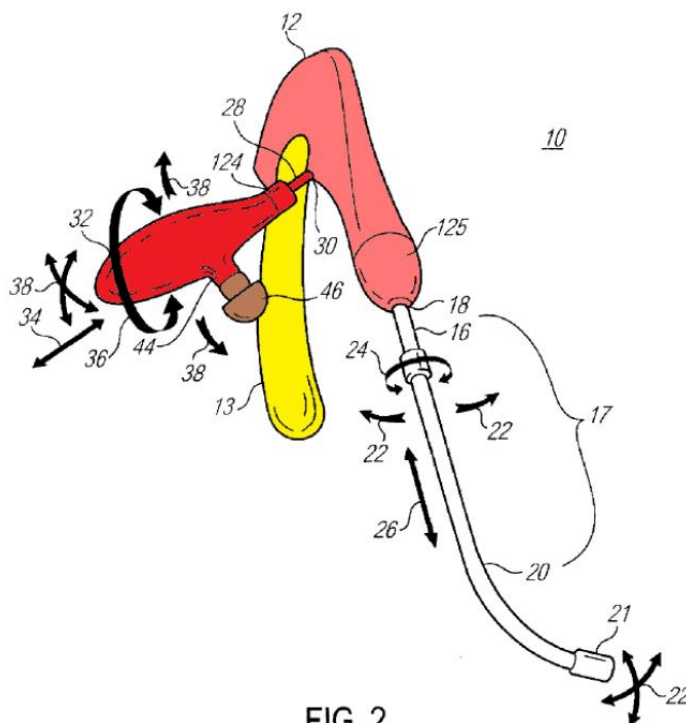


FIG. 2

Bose admits that it raised this argument for the first time at the oral hearing. Bose Br. at 58 (citing Appx12340 (76:2-13)). That is too late for the Board to consider it. *See Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2017) (holding that the Board's rejection of arguments on the ground that they were newly raised in a reply brief was not an abuse of discretion); *Dell Inc. v. Acceleron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018) ("Board was obligated to dismiss [an] untimely argument ... raised for the first time during oral argument").

In any event, Bose’s untimely, alternative theory lacks merit because the record does not contain evidentiary support for the proposition that Davis’s enclosure 32 is, or is part of, a speaker element. Nor is there any evidence that the Davis’s earbud 46 and enclosure 32 constitute an earphone or acoustic transducer, as Bose now asserts. Bose Br. at 58. Still further, Bose did not assert in its petition that Davis’s earbud 46 and enclosure 32 could constitute an earphone or acoustic transducer. *See Magnum Oils, supra*, 829 F.3d at 1381 (Board is not “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during an IPR”); *Sirona Dental Sys. GmbH v. Institut Straumann AG*, 892 F.3d 1349, 1356 (Fed. Cir. 2018) (Board may not “deviate from the grounds in the petition and raise its own obviousness theory”). Thus, Bose’s alternative theory fails to show that the Board’s erroneous construction was not harmful to Koss.

II. NO SUBSTANTIAL EVIDENCE SUPPORTS THE BOARD’S DETERMINATION IN IPR2021-00680 THAT THE DSP CLAIMS ARE UNPATENTABLE

Koss’s opening brief explained why no substantial evidence supports the Board’s determination in IPR2021-00680 that the so-called “DSP” claims of the ’934 Patent (i.e., claims 56 and 57) are unpatentable. None of the references in the asserted grounds (Grounds 1A and 2C) discloses a DSP in a true wireless (TWS) earbud that provides a sound quality enhancement (SQE) for audio *played by the earbud* and, even if aspects of the claim limitations were known across various

references, the subject matter of the DSP would not have been obvious as a whole. Koss Op. Br. at 62-66. Bose's counter-arguments do not demonstrate otherwise. Thus, this Court should reverse the Board's determination that the DSP claims are unpatentable.

A. The Board's Finding that a Person of Ordinary Skill in the Art Would Have Been Motivated to Use Schrager's DSPs in True-Wireless Earbuds to Enhance Sound Quality is Not Supported by Substantial Evidence

Koss's opening brief explained that although Schrager discloses a headset, with two earpieces, and with a DSP, Schrager's DSPs do not provide a SQE for audio that is played audibly by Schrager's speaker. Koss Op. Br. at 59, 62. Bose does not dispute this. Bose's brief lists several facts in the record (Bose Br. at 61), but none of the listed facts is that Schrager, or any other reference, discloses a DSP in a TWS earbud that provides a SQE for audio played by the earbud's speaker.⁶

Implicitly acknowledging this shortcoming in the evidence, Bose next asserts that it need not demonstrate that each element of the claim was known in a single reference. Bose Br. at 62. However, neither reference in the proposed Schrager-Goldstein combination discloses a DSP in a TWS earbud that provides a SQE for audio played by the earbud's speaker. Neither Schrager nor Goldstein disclose such

⁶ Bose even lists Koss's failure to appeal claim 55 as a "fact" showing that claim 56 is obvious under Ground 1A. Bose Br. at 63. However, the Board also found claim 55 obvious under Ground 2C, which did not involve Schrager or Goldstein. Appx89.

an earphone and Bose does not assert that they do. *See* Koss Op. Br. at 63 (explaining that Goldstein discloses an earphone, and not necessarily an earbud, with a core logic that can include “DSP code,” Goldstein does not does not explain what the DSP code does or comprises).

Bose also criticizes Koss for not discussing the evidence before the Board showing that using DSPs in earbuds was conventional, citing the disclosures of Goldstein and Oh. Bose Br. at 64. However, no substantial evidence, including Goldstein and Oh, show a DSP in an earbud that provides a SQE for audio *played* the earbud’s speaker. Goldstein does not explain that the DSP code, even if in an earbud, provides a SQE for the audio played by Goldstein’s earphone. Appx3141, ¶¶ [0067]-[0070]. Further, Oh’s “echo eliminating circuit,” which uses a DSP is for eliminating echoes on sound picked up by Oh’s voice detecting unit and transmitted to “a person on the other end of the communication line” during a call. Appx7676, ¶¶ [43]-[44]. The Board even acknowledged that Koss might be correct about this. Appx86.

Bose also criticized Koss’s characterization of Dr. Casali’s testimony (Bose Br. at 64), but it is undisputed that Casali did not testify that TWS earbuds with a DSP to provide a SQE for audio played by the earbuds were known at the relevant time. He merely testified that DSPs that provide noise cancellation in headphones with “earcups”—not TWS earbuds—were known; and that DSPs used in larger

earphones were small enough to fit within earbuds. Bose Br. at 64 (citing Appx2620-2622, ¶ 58; Appx2629-2630, ¶ 65). The record shows abundantly, however, that not all DSPs in earphones, or even earbuds, provide a SQE for the audio played by the earphone/earbud, such as demonstrated by Schrager, Goldstein and Oh. At bottom, none of the evidence for Ground 1A teaches a TWS earbud with a DSP that provides a SQE for audio played by the earbud, where the TWS earbud also receives firmware upgrades (another requirement of claim 56). No substantial evidence supports that such a TWS would have been obvious as, due to the size and power constraints of a TWS earbud, it would not have been obvious for a person skilled in the art to arrive at the subject matter of the DSP claims. Appx11316-11317, ¶¶ 81-82. Absent hindsight and the use of the '934 Patent disclosure, Bose failed to provide a rationale as to why a person skilled in the art would integrate a DSP in a TWS earbud that receives remote firmware upgrades and provides a SQE for output into a small TWS earbud in light of the significant size and power hurdles such integration would require. As such, no substantial evidence supports the Board's determination that claim 56 of the '934 Patent is unpatentable over Schrager in view of Goldstein.

Finally, Bose mischaracterizes the Koss argument that the Board classified as untimely. Bose asserts that Koss sought to retract an acknowledgement that Goldstein discloses an earpiece that can include a DSP than can attenuate and mix

different signals. Bose Br. at 62-63 (citing Appx44). In contrast to Bose's assertion, the Board found that Koss made a new argument in its Sur-reply that Goldstein does not disclose that the logic circuit in Goldstein's Figure 5A in-ear earphone, even if it includes a DSP, performs a SQE. Appx44. Even Bose acknowledges that Koss's patent owner response argued that Goldstein does not disclose a DSP in an earbud that perform a SQE (Bose Br. at 63, citing Appx1171-1172), thus Koss's position at the oral argument was merely an extension of its position in its patent owner response. Koss Op. Br. at 64. Accordingly, it was an abuse of discretion for the Board to find that Koss waived this argument.

B. The Board's Finding that a Person With Ordinary Skill in the Art Would Have Been Motivated to Use Rezvani-875's DSP to Perform Conventional Sound-Quality Enhancement Techniques is Not Supported by Substantial Evidence.

For Ground 2C, Bose relies on the DSP in Revzani-875 as the claimed DSP. Appx871-872; Appx887; Bose Br. at 66. Like Schrager, however, there is no evidence that Rezvani-875's DSP performs a SQE for audio output by the earphone. Instead, Rezvani-875's DSP is used for speech recognition. Appx2982, ¶¶ [0022]-[0024]. Again, like for Ground 1A, there is no substantial evidence under Ground 2C supporting that the DSP of claim 56, that is in a TWS earbud and that provides a SQE for audio played by the earbud, would have been obvious. Koss Op. Br. at 66.

Again, Bose contends that Koss concedes that earphones that included DSPs where known at the relevant time, and that it would have been obvious to incorporate

such DSPs into TWS earbuds. Bose Br. at 67. Bose’s argument, however, ignores that the DSP of claim 56 provides the SQE for audio played back by the earphone, which Rezvani-875 does not disclose. Again, Oh does not describe such a DSP either, as Oh’s “echo eliminating circuit” uses a DSP for eliminating echoes on sound picked up by Oh’s voice detecting unit and transmitted to “a person on the other end of the communication line” during a call. Appx7676, ¶¶ [43]-[44].

Similar to Ground 1A, absent hindsight and the use of the ’934 Patent disclosure, Bose failed to provide for Ground 2C a rationale as to why a person skilled in the art would integrate a DSP in a TWS earbud that receives remote firmware upgrades and provides a SQE for output into a small TWS earbud in light of the significant size and power hurdles such integration would require.

III. SUBSTANTIAL EVIDENCE SUPPORTS THE BOARD’S DETERMINATION THAT BOSE FAILED TO PROVE THAT THE SIGNAL STRENGTH CLAIMS ARE UNPATENTABLE

A unanimous panel in IPR2021-00612 and the majority in IPR2021-006800 found that Bose failed to prove that the Signal Strength claims are unpatentable for two reasons. First, the Board found that Bose had not shown any of the relied upon references, particularly Harada, disclose the “transitioning” claim limitation. App52-53; Appx186-187. The Board even found that, to the extent Bose made a different theory—that Harada only shows transitioning from one generic device to another, with the other references providing the sources for the digital audio

content—Bose still failed to identify where Harada teaches such generic transitioning between registered devices. Appx54-55; Appx187. Finally, the Board found that Bose had “not articulated a reason, with rational underpinning, to combine” the other references in the asserted combinations (i.e., Schragger and Goldstein, or Rezvani-446, Rezvani-875 and Skulley) with Harada. Appx55-58; Appx187-189. All of these factual findings deserve substantial evidence deference. *Uniloc 2017 LLC v. Facebook Inc.*, 989 F.3d 1018, 1031 (Fed. Cir. 2021).

In its Cross-Appeal, Bose asserts that the Board’s first finding, albeit allegedly wrong, is “inconsequential” (Bose Br. at 72, 73) because, according to Bose, no substantial evidence supports the Board’s finding that Harada does not teach Harada’s first device transitioning between registered devices at all. *Id.* at 74. Bose’s argument fails, however, because the Board analyzed Harada’s paragraphs relied upon by Bose in its petitions and found, justifiably, that they only disclose ***selecting*** a registered device for connection, and not transitioning between registered devices. Appx54 (citing Harada ¶¶ 11, 14-16, 20, 23, 25, 31, 78, 85, 145-147); *see also* Bose Br. at 75 (citing Appx2393, ¶ 208, which cites ¶¶ 16-31 of Harada).

Bose also disputes the Board’s finding about the lack of a reason to combine the references in Bose’s combinations (Br. at 80-88), but both substantial evidence and case law supports the Board’s finding. Thus, this Court should affirm the Board’s determinations that Bose failed to prove that the Signal Strength claims are

unpatentable.

A. Substantial Evidence Supports the Board’s Determination that the References in Bose’s Harada-Based Grounds Fail to Disclose the Transitioning Claim Element

The Signal Strength claims recite the above-described “transitioning” claim limitation, i.e., that the headphone assembly “transitions to play digital audio content received wirelessly from a second digital audio source via a second wireless communication link based on, at least, a signal strength level for the second wireless communication link ...” Appx253, 18:53-57. The Board found that none of the relied upon references disclose the claim limitation. Appx52-55; Appx186-187. Even though Bose asserts that this finding by the Board is ultimately “inconsequential,” Bose challenged the finding. Bose Br. at 71-73. Substantial evidence, however, supports this finding by the Board.

1. Substantial Evidence Supports that Harada Fails to Disclose the “Transitioning” Claim Limitation

Despite admitting that it’s “petitions never relied on Harada to supply the combinations’ digital audio sources” of the “transitioning” claim limitation (Bose Br. at 72), Bose asserts nevertheless that the Board’s finding that Harada fails to teach playing digital audio content received from multiple sources is “manifestly incorrect.” *Id.* at 71. Bose’s admission alone is sufficient to support the Board’s finding that Harada failed to disclose the entirety of the “transitioning” claim limitation. *See Magnum Oil, supra*, 829 F.3d at 1381 (“the Board must base its

decision on arguments that were advanced by a party”). If Harada does not disclose “digital audio sources” that play digital audio content, Harada does not disclose the first device transitioning from one registered device to another to play digital audio content from those registered devices, as required by the “transitioning” claim limitation of the Signal Strength claims.

Still further, the record factually supports the Board’s determination. As the Board found, Harada discloses the first device “selecting” a source, i.e., a registered device, for a connection. Appx52-54; Appx186-187; Appx7649-7650, ¶¶ [0010]-[0023]; Appx7652, ¶ [0067]; Appx7653-7654, ¶¶ [0083]-[0085]. Although Harada’s sources, i.e., registered devices, could be cell phones (Appx7650, ¶ [0016]; Appx7652, ¶ [0067]), that does not necessarily mean that they transmit “digital audio content” to Harada’s first device. As the Board found, “Harada’s examples are directed to broadcasting a *text*-based message” Appx53 (citing Appx7663-7665 (¶¶ [0196]-[0237]) and Appx7642-7646 (Figs. 27-31)); Appx187 (same citations) (emphasis added). There is no evidence that text messages constitute the claimed “digital audio content.” Similarly, Harada discloses that the registered device can transmit “a short-range wireless signal” from which signal strength levels can be determined (Appx7650, ¶¶ [0016], [0025]; Appx7651, ¶ [0028]; Appx7653, ¶ [0078]; Appx7654, ¶ [0085]), but there is no record evidence that the short-range wireless signal comprises digital audio content.

The majority even analyzed in depth the paragraph of Harada that the Board thought was “best” for Bose, i.e., Harada’s ¶ [0085], and still found it lacking. Appx53; *see also* Appx186-187. The majority’s detailed analysis first noted that Bose cited Harada’s ¶ [0085] but did not explain its reliance on it. Appx53 (citing Appx834, Appx837-838, Appx2394 (¶ 210), Appx2398 (¶ 217)). The record supports this finding by the majority because in each instance, Harada’s ¶ [0085] was merely included, in the petition or the declaration of Bose’s expert (Williams), in a lengthy list of paragraphs from Harada without explanation of its significance. Appx834, Appx837-838, Appx2394 (¶ 210), Appx2398 (¶ 217). The majority additionally analyzed the merits of Harada’s ¶ [0085] and found that, even if interpreted favorably for Bose, “it does not teach transitioning from one digital audio source to another.” Appx53; Appx186. The record supports this finding too because Harada’s ¶ [0085] discloses neither (i) the first device receiving digital audio content from any of the registered devices, e.g., cell phones nor (ii) the first device transitioning from one registered device (e.g., cell phone) to another. Appx7654, ¶ [0085]. Harada’s ¶ [0085] merely discloses the first device selecting one of the registered devices for a connection based on signal strength, i.e., “the connection can be achieved with a cellular phone [i.e., a registered device] among those” registered devices. *Id.* There is no mention in Harada’s ¶ [0085] of the first device transitioning between registered devices. Finally, the Board concluded that

Williams’s testimony about these paragraphs in Harada “is entitled to little weight” because it “merely copies the argument from the Petition, without adding to it materially.” Appx54, n.15.

Bose does not reasonably challenge these findings by the majority. It does not challenge the Board’s prototypically fact-based finding that Williams’s opinion is entitled to little weight. Nor does Bose cite any teaching in Harada’s ¶ [0085] that Harada’s continuous monitoring by the first device involves digital audio content or that the first device transitions between registered devices to keep playing digital audio content. Instead, at “best” as found by the majority, Harada’s ¶ [0085] merely discloses selecting a concurrent connection, thereby supporting the majority’s finding as to what Harada discloses.

Bose asserts instead that because Harada’s destination devices can be cell phones, the registered devices are digital audio sources. Bose Br. at 72. Merely because a device, such as a cell phone, can transmit digital audio does not mean that all of its transmissions are digital audio. As Harada explains, and as pointed out by the Board, the transmissions from Harada’s registered devices include text messages. Appx7665, ¶¶ [0230]-[0232]; Appx50-51; Appx184; *see also* Bose Br. at 72 (Bose admitting that Harada describes exchanging text information). While Harada discloses that registered devices may comprise voice transmission/reception units “to enable a voice telephone call, etc. with the cellular phone 4,” e.g., the first device

(Appx7653, ¶ [0077]), Bose failed to cite disclosure in Harada of the first device (e.g., cellular phone 4) transitioning between registered devices to take phone calls from them.

Thus, the record adequately supports the Board’s finding that Harada does not disclose the “transitioning” claim limitation. *See Best Medical Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1355 (Fed. Cir. 2022) (this Court “do[es] not reweigh the evidence but rather ask whether there is ‘evidence that a reasonable mind might accept as adequate to support a conclusion.’”) (quoting *Cleo Inc. v. United States*, 501 F.3d 1291, 1296 (Fed. Cir. 2007)).

2. Substantial Evidence Supports that the Other References in Bose’s Combinations Fail to Disclose the “Transitioning” Claim Limitation

The Board also found that the “transitioning” claim limitation was “missing” from the other references in Bose’s Harada-based grounds. In IPR2021-00680, the Board found it was “missing from the Schrager-Goldstein combination” (Appx54) and in IPR2021-00612 that it was “missing from the combination of Rezvani-446, Rezvani-875, and Skulley.” Appx187. The Board’s findings flow directly from Bose’s petitions, which did not assert that any of these references disclose the “transitioning” claim limitation. Instead, the petitions asserted that Harada discloses the limitation because, according to the petitions, the combinations “use[] Harada’s technique to automatically transition from playing digital audio content (e.g., music)

....” Appx837; Appx11796; *see also* Appx877; Appx11749. As just described, however, the Board justifiably found that Harada does not disclose a first device that transitions from one wireless source to another keep playing digital audio content or music.

Bose also does not assert in its brief that Schrager, Goldstein, Rezvani-446, Rezvani-875, or Skulley discloses the “transitioning” claim limitation. Instead, Bose merely asserts that they disclose the digital audio sources in the Signal Strength claims. Bose Br. at 72-73. Thus, sufficient evidence supports the Board’s determination that neither Harada nor the other references in Bose’s Harada-based combinations across the two IPRs disclose the “transitioning” claim limitation.

B. Substantial Evidence Supports the Board’s Findings that Bose Failed to Identify Where Harada Discloses Transitioning from One Generic Device to Another

Bose also asserts that the majority’s determination in IPR2021-00680 that Harada does not disclose transitioning between generic sources is “[m]ore critical” than the majority’s finding that Harada fails to teach playing digital audio content received from multiple sources. Bose Br. at 74. However, this finding by the Board was not “more critical” than other findings; instead it was an alternative, independent reason for the Board’s ultimate finding that Bose failed to prove that the Signal Strength claims are unpatentable. As such, this Court need not even reach whether substantial evidence supports this Board finding. In any event, Bose

mischaracterized the Board's finding. It found that *Bose failed to identify* where Harada discloses the generic transitioning capability (Appx54; Appx187) and the record adequately supports the Board's finding.

1. The Board's Finding that Bose Failed to Identify Where Harada Discloses Generic Device Transitioning was an Alternative Finding by the Board in Support of its Ultimate Conclusion

Bose is wrong that the Board's finding that Bose failed to identify where Harada teaches transitioning between generic sources was "more critical" than any of the Board's other findings. Bose Br. at 74. To the contrary, in both IPRs the Board's finding that Bose failed to identify where Harada teaches transitioning between generic sources was an alternative basis for its ultimate conclusion that Bose failed to prove that the Signal Strength claims were unpatentable. In IPR2021-00680, the majority commented that Bose failed to identify where Harada teaches transitioning between generic sources to address the dissent's view that Bose's combination could rely on Goldstein and Schrage for playing digital audio content from more than one device, with Harada merely supplying a transition from one generic electronic device (e.g., a registered device in Harada) to another device based in part on signal strength. Appx54. The majority provided two alternative reasons that the dissent was wrong. The first reason was that the dissent's view was not the combination Bose presented in its petition. *Id.* The majority's alternative reason for rejecting the dissent's view was that the dissent's view "would not be persuasive or

supported by the evidence” because, in part, Bose failed to identify where Harada teaches transitioning between generic sources. *Id.* Similarly, in IPR2021-00612, the Board only found that Bose failed to identify where Harada teaches transitioning between generic sources “[t]o **the extent** [Bose] only argues that Harada shows transitioning from one generic source to another” Appx187 (emphasis added). The “to the extent” qualification in the Board’s reasoning indicates the fallback nature of the Board’s conclusion, i.e., that it is secondary to the Board’s primary finding that Bose had not “show[n] that Harada teaches playing digital audio content received from multiple sources.” Appx186.

Thus, even if the Board’s finding that Bose failed to identify where Harada teaches transitioning between generic sources was not supported by sufficient evidence, that finding alone would not require vacatur and remand as the finding was merely an alternative basis supporting the Board’s ultimate conclusions. That is, if this Court finds that substantial evidence supports the Board’s primary, independent factual finding for its ultimate finding on the Signal Strength claims, i.e., that Harada does not teach playing digital audio content received from multiple sources (*see* Appx52; Appx186), then this Court need not reach the issue of whether Bose identified where Harada teaches transitioning between generic sources. *See LSI Corp. v. Regents of Univ. of Minn.*, 43 F.4th 1349, 1355 (Fed. Cir. 2022) (independent ground for affirming Board sufficient); *see also Gen. Access Sols., Ltd.*

v. Sprint Spectrum L.P., 811 F. App’x 654, 659 n.3 (Fed. Cir. 2020) (“Because we find that the Board did not abuse its discretion in declining to address the improperly incorporated documents, we do not reach the question of whether the Board erred in its alternative holding that evaluated those materials ...”). As described previously, sufficient evidence supports the Board’s primary finding. *See* Section IV.A, *supra*. In any event, the record supports adequately the Board’s alternative finding as described below.

2. Bose Mischaracterized the Board’s Finding

Bose’s assertion that sufficient evidence does not support the majority’s determination in IPR2021-00680 that Harada does not disclose transitioning between generic sources (Bose Br. at 74) mischaracterizes what the Board found, which was that ***Bose failed to prove*** that Harada discloses transitioning between generic sources. The majority specifically stated that Bose “does not identify where Harada teaches transitioning from one generic source.” Appx54. Thereafter, the majority identified Harada’s paragraphs that Bose cited and explained why “at most” they “show selecting one or more devices to connect to, from a set of registered devices ...,” but that none of the cited paragraphs “show a cellular phone (or other device) starting with a connection to a first device and transitioning to a connection to a second device.” Appx54-55. The Board made a similar finding in IPR2021-00612 even though there was no dissent to address. Appx187. The record supports

the Board’s findings about Bose’s proof as explained below.

3. Substantial Evidence Supports the Board’s Findings that Bose Failed to Identify Where Harada Discloses Transitioning from One Generic Device to Another

The excerpts from Bose’s petition papers that its brief cites confirm the Board’s finding that Bose failed to identify where Harada discloses transitioning between generic devices. Bose cites ¶ 208 of Williams’s IPR2021-00680 declaration and ¶ 199 of his IPR2021-00612 declaration as showing, allegedly, that as a user of Harada’s first device moves around, the first device will detect another registered device with a stronger availability and automatically switch to connect to that other registered device. Bose Br. at 75 (citing Appx2393, ¶ 208; Appx13146-13147, ¶ 199). These two paragraphs in Williams’s declarations are identical and cite only ¶¶ [0016]-[0031] and claim 8 of Harada as supporting Williams’s assertions. Appx2393, ¶ 208; Appx13146-13147, ¶ 199. Neither Harada’s ¶¶ [0016]-[0031] nor claim 8 describe an ability of Harada’s first device to automatically switch from one registered device to another. Harada’s ¶¶ [0016]-[0031] and claim 8 describe only *selecting* one of the registered devices for connection (Appx7650-7651, Appx7667), as the Board justifiably concluded, stating that Bose’s citations to Harada “at most show selecting one or more devices to connect to, from a registered priority, signal strength, and remaining battery power.” Appx54; Appx187.

Bose’s brief instead quotes Williams’s opinions from ¶ 208 of his IPR2021-

00680 declaration and ¶ 199 of his IPR2021-00612 declaration (Bose Br. at 75), but Williams’s quoted explanation in these two paragraphs describes automatic switching between registered devices, which is not described in any of Harada’s paragraphs that Williams cited for his opinion, i.e., Harada’s ¶¶ [0016]-[0031]. Appx2393, ¶ 208; Appx13146-13147, ¶ 199. Thus, the Board justifiably and adequately could find that Williams’s opinions exceed an explanation of what Harada discloses, which the Board’s rules prohibit. *See* Patent Trial and Appeal Board, Consolidated Trial Practice Guide 36 (Nov. 2019) (“expert testimony cannot take the place of disclosure from patents or printed publications” and cannot be “a substitute for disclosure in a prior art reference itself”). Thus, the record justifies the Board’s determination that Bose failed to identify where Harada discloses transitioning from one generic source to another. *See Magnum Oils, supra*, 829 F.3d at 1381 (Board is not “free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during an IPR”); *Sirona Dental, supra*, 892 F.3d at 1356 (Board may not “deviate from the grounds in the petition and raise its own obviousness theory”).

In that connection, Koss’s alleged admissions (*see* Bose Br. at 76) are unhelpful to Bose. Koss and its expert commented on another embodiment in Harada—not the portions of Harada relied upon by Bose in its petitions—that also does not disclose the “transitioning” claim limitation because (i) this other

embodiment does not use the signal strength of the link between Harada’s first device and the registered device in order to determine whether to make the connection and (ii) does not involve digital audio content. Appx1154-1155; Appx11297-11298, ¶ 52; Appx12076-12076; Appx20312-20313, ¶ 51. Indeed, as even Bose points out (Bose Br. at 76), Koss argued that neither Bose nor its experts “explained how Harada’s ‘selection’ compared to the claimed ‘transitioning,’” (Appx1282; Appx12216), which is essentially what the Board found. Appx55 (“none of Petitioners’ citations show a cellular phone ... starting with a connection to a first device and transitioning to a connection to a second device”); Appx187 (same).

C. Substantial Evidence Supports the Board’s Determination that Bose Failed to Show a Reason, with a Rational Underpinning, to Combine the References

The Board’s weighing of the evidence in its determination that Bose “has not articulated a reason, with a rational underpinning, to combine” the other relied upon references in its proposed combinations with Harada (i.e., (i) Goldstein and Schrager and (ii) Revzani-446, Rezvani-875, and Skulley) “with a generic teaching of transitioning from one source to another” (Appx55; Appx187-188) is a quintessential factual determination that is entitled to deference. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 794 (Fed. Cir. 2021) (reason to combine references “is a factual inquiry” reviewed for “substantial evidence”); *Teva Pharm. USA, Inc.*

v. Sandoz, Inc., 574 U.S. 318, 331-333 (2015) (factual findings by lower tribunal entitled to deference from reviewing court). Contrary to Bose's assertions, substantial evidence supports the Board's factual determination and the Board reasonably applied the relevant law.

1. The Board Did Not Ignore Bose's Arguments and Evidence

In both IPRs, Bose alleged multiple reasons to make its proposed combinations. Bose asserts that the Board ignored its first reason motivating the combination (improved convenience for the user) and Bose criticized how the Board viewed Bose's second reason (applying known techniques to known devices). Bose Br. at 83-85. Both arguments lack merit. Far from ignoring Bose's first reason, the Board addressed it several times; and the record supports the Board's factual findings as to the second reason.

a. The Board Did Not Ignore Bose's First Alleged Reason Motivating its Proposed Combinations

According to Bose, Williams's testimony at ¶ 211 of his IPR2021-00680 declaration and at ¶ 202 of his IPR2021-00612 declaration set forth Bose's first reason motivating the proposed combinations. Bose Br. at 83 (citing Appx2394-2396 (¶ 211) and Appx13148-13149 (¶ 202)). Williams opines in these paragraphs that Harada's technique would improve convenience for the user. Bose also asserts that the majority overlooked Williams's corroborating testimony for the first reason, at ¶¶ 208-211 of his IPR2021-00680 declaration and at ¶¶ 199-202 of his IPR2021-

00612 declaration. Bose Br. at 85.

Bose's assertions, however, are factually wrong. The Board's Final Written Decision address this testimony from Williams multiple times in rejecting Bose's motivation arguments. The Board first summarized Bose's positions on motivation with citations to the very paragraphs in Williams's declarations that Bose alleges that the Board ignored. *See* Appx51 (citing Williams's IPR2021-00680 declaration (Ex. 1003) for the '934 Patent at ¶ 210); Appx52 (citing ¶¶ 210-211 of Williams's IPR2021-00680 declaration); Appx53 (citing ¶ 210 of Williams's IPR2021-00680 declaration); Appx185 (citing ¶¶ 195-200 and 201-202 of Williams's IPR2021-00612 declaration (Ex. 1003) for the '025 Patent IPR). After recapping Bose's argument and evidence, the Board rejected it, stating in part that the alleged "improvement" described by Harada, and relied upon by Williams in ¶ 211 and ¶ 202 of his respective declarations, is to a different benefit (maintaining concurrent connections) than the one asserted by Williams and Bose (transitioning from one connection to another). Appx56 n.18; Appx188 n. 27. The record confirms the Board's findings. In these paragraphs, Williams relied upon Harada's ¶¶ [0020] and [0031] (Appx2395; Appx13148), which describe how the "convenience for a user is improved" with connection to "concurrent" devices with defined priorities and how the device with higher availability for the user can be connected. Appx7650 (¶ [0020]); Appx751 (¶ [0031]). These disclosures in Harada and relied upon

Williams justify the Board’s finding that the improvement in convenience for Harada’s user is not the convenience of transitioning from one connection for streaming digital audio to another. Appx56 n.18; Appx188 n. 27. Thus, the Board specifically addressed and rejected Bose’s first reason, thereby making inapposite Bose’s reliance on *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1325 (Fed. Cir. 2017). Bose Br. at 84.

b. The Board Did Not Ignore Bose’s Second Alleged Reason Motivating its Proposed Combinations

Bose asserts that ¶ 212 of Williams’s IPR2021-00680 declaration and ¶ 203 of his IPR2021-00612 declaration set forth Bose’s second reason motivating the combinations, i.e., allegedly applying a known technique to known devices. Bose Br. at 85-86 (citing Appx2396 (¶ 212) and Appx13149-13150 (¶ 203)). In neither declaration, however, did Williams explain why or how the allegedly known technique applies to the known devices. Paragraph 212 in Williams’s IPR2021-00680 declaration (’934 Patent) is a single sentence that merely identifies the allegedly known technique from Harada and the known devices, along with several citations, without any further meaningful explanation. Appx2396 (¶ 212). Williams did not explain how a person of ordinary skill in the art would apply the allegedly known technique to the combination of Schragar and Goldstein. Indeed, Bose’s brief states that Williams’s declaration “*cites*”—not “explains”—two other references that were not used in the proposed combinations. Bose Br. at 85 (citing App3601;

Appx3614-3618). For these reasons, the Board justifiably found Williams’s testimony not credible “on this point.” Appx56.

While Williams’s ¶ 203 in his IPR2021-00612 declaration (Appx13149-13150) is lengthier than ¶ 212 of his IPR2021-00680, his lengthier testimony merely corroborated the existences of the known technique and the known device, not how they would be applied by a person of ordinary skill in the art in the asserted combinations. Without such explanations, the Board justifiably found Williams’ testimony conclusory. Appx188; *see also TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1359–60 (Fed. Cir. 2019) (expert testimony insufficient when consisted of conclusory statements that skilled artisan could combine references).

Thus, contrary to Bose’s assertions, the Board did not ignore Bose’s second alleged reason motivating the combinations; instead, it justifiably found the proof lacking.

2. The Board Did Not Misapply Precedent About Alleged Motivations to Combine

Bose asserts that it need only demonstrate “*some*” or “*any*” reason motivating its proposed combinations. Bose Br. at 87 (citing *Bayer Pharma AG v. Watson Lab’ys*, 874 F.3d 1316, 1324 (Fed. Cir. 2017)). Many cases, however, disprove the absoluteness of Bose’s oversimplification of the law. In fact, three cases cited in Bose’s brief disprove Bose’s assertion. In *Bayer Pharma*, instead of relying on merely “some” motivation, this Court reviewed the “entire record” to assess whether

the district court erred in finding that there was no motivation in that case. 874 F.4th at 1324. If “any” or only “some” motivation was sufficient, as Bose asserts, this Court would not have needed to review the entire record. Bose also cites *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) for the proposition that if a proposed combination has both advantages and disadvantages, “this does ***not necessarily*** obviate motivation to combine.” Bose Br. at 88 (emphasis added). This is another way of saying that the advantages and disadvantages have to be weighed in order to determine whether there is sufficient motivation, which implies, contrary to Bose’s assertion, that “any” or “some” advantage from the combination is not necessarily sufficient.

Finally, *Intel Corp., supra* (cited at Bose Br. at 88), confirms that a weighing of advantages and disadvantages is sometimes necessary, which disproves that “some” or “any” motivation is necessarily sufficient. In *Intel Corp.*, this Court approved as “satisfactory” the Board’s finding, in an IPR, that a transistor operating in the triode mode for some operating conditions was insufficient to outweigh the disadvantage of the transistor operating in a different mode over most of the operating conditions. 21 F.4th at 796. Thus, “some” or “any” motivation from the transistor operating sometimes in the triode mode was insufficient motivation.

This Court has similarly confirmed that common sense and intuition, which can be “some” or “any” motivation, may be sufficient in some circumstances, but

not always. This Court concluded in *In re Nuvasive, Inc.*, 842 F.3d 1376, 1383-84 (Fed. Cir. 2016) that a lack of evidence that a person of ordinary skill in the art would have sought certain information outweighed common sense. Similarly, in *In re Van Os*, 844 F.3d 1359, 1361-62 (Fed. Cir. 2017), this Court found that intuition was not a sufficient motivation to combine. In short, these cases confirm that a patent challenger must prove more than “some” or “any” motivation to combine, with the level of degree of motivation that qualifies as satisfactory varying depending on the facts and circumstances of each case.

In the same manner, substantial evidence here supports the Board’s determination that Bose’s evidence of “some” motivation was insufficient. The Board weighed the competing evidence of the motivation to combine and found against Bose. The Board’s rationale about possible disorientation and undesirability due to switching digital audio content sources (Appx57; Appx189) constitutes substantial evidence supporting the Board’s decision. *See In re NuVasive*, 842 F.3d at 1376 (substantial evidence requires “something less than the weight of the evidence but more than a mere scintilla of evidence”). The Board’s weighing of the advantages and disadvantages also does not constitute reversible legal error, as Bose asserts (Bose Br. at 89), because this Court’s precedent in fact endorses weighing of the advantages and disadvantages when determining whether there is a sufficient motivation to combine. *See Intel Corp., supra*, 21 F.4th at 796 (scenarios when the

combination would not be beneficial, i.e., the transistor not operating in the triode mode, outweighed scenarios where the combination would have been beneficial). Thus, the Board reasonably applied, in light of the record evidence, this Court’s precedents about the motivation to combine references.

3. Bose Waived Appealing the Board’s Finding that Bose Made New Arguments at the Oral Hearing

In both IPRs, as part of its finding that Bose failed to articulate a reason, with a rational underpinning, to combine the references, the Board found that Bose made new arguments about Harada’s dynamic selection at the oral hearings. In IPR2021-00680, the Board found that Bose made new arguments about how, using Harada’s dynamic selection, a user could “walk around” and go from one digital audio source to another. Appx56 (citing Appx1441-1442, 99:20-100:1). The Board found that Bose made a similar new argument at the oral hearing in IPR2021-00612. Appx189. Bose did not appeal that the Board abused its discretion in finding these arguments at the oral hearings new. *See* Bose Br. at 6 (statement of issues in Bose’s cross-appeal); *id.* at 35-37 (Bose’s argument summary and standard of review sections lacking any mention of Board’s procedural rulings). Thus, Bose waived appealing that the Board was justified in labeling Bose’s arguments as new. *See SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1319 (Fed. Cir. 2006) (“Our law is well established that arguments not raised in the opening brief are waived.”). It is immaterial that the Board, in performing its analysis, considered (and rejected) the

merits of Bose’s new argument. Appx56 (“To the extent that this argument should even be considered ...”); Appx189 (same).

IV. CONCLUSION

Because the Board erred as described above, this Court should reverse the Board’s erroneous invalidation of: (i) claims 40–43, 46, 48 and 51, i.e., the “elongated portion” form factor claims, of the ’025 Patent; (ii) claims 29–31, 34, 36 and 53, i.e., the “hanger bar” form factor claims, of the ’025 Patent; and (iii) claims 56 and 57, i.e., the TWS earbud DSP claims, of the ’934 Patent. Further, this Court should affirm the Board’s findings that Bose failed to prove that the Signal Strength claims in the two patents are unpatentable as substantial evidence supports the Board’s factual findings that led to those determinations.

Dated: July 25, 2023

Respectfully submitted,

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**UNITED STATES COURT OF APPEALS FOR
THE FEDERAL CIRCUIT**

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Case Number: 2023-1173, -1179, -1180, -1191

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